

## Memorandum

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TO: Performance Measures Technical Sub-Committee

FROM: John Crocker

DATE: July 11, 2007

SUBJECT: Regional Service Availability – Headways and Span of Service

This short report presents the availability of fixed route transit services within the metro Atlanta region during the spring and early summer 2007 by focusing on two specific measures – Headways and Span of Service. This is compared to Headways and Span of Service presented in April, 2007 to monitor any changes in service. The fixed route services are divided into four types – heavy rail, express bus, local bus and activity center since these routes have defined routes with (usually) some type of published headways and hours. Local bus services are suggested to be further refined into Semi-Express, Arterial / Major Road, Suburban Local, Feeder, and Small Bus. The focus on these two standards is to complement some of the information presented in the SMARTRAQ report and the annual Metropolitan Atlanta Performance (MAP) report which highlight geographic coverage of the transit network through population and employment within walking distances of transit and overall vehicle service hours. Examination of headways and span of service allows an initial picture to be developed of the quality of the service that is being provided.

Services are described based upon the type of service being provided.

### **Local Bus**

As of March, 2007, there were 147 local bus routes operating within the Atlanta region, twelve (12) routes operated by CCT, four (4) routes operated by C-TRAN, eight (8) routes operated by GCT, and the rest operated by MARTA.<sup>1</sup> This represented a net increase of two local bus routes from the early 2007.<sup>2</sup> Table 1 shows the number of routes operating at the various Span of Service LOS as defined by the Transit Capacity and Quality of Service Manual – 2<sup>nd</sup> Edition and Figure 1 presents the Local Bus Span of Service LOS.

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<sup>1</sup> Because of their loop nature, MARTA routes 100 and 101 and C-TRAN route 500 were classified as circulator routes.

<sup>2</sup> The following routes were reclassified as local routes from express routes: CCT 10A, CCT 10B, CCT 10B, GCT 101A, GCT 102A, GCT 103A

## Memorandum

*Table 1 – Local Bus Span of Service LOS*

	Weekday Span of Service		Saturday Span of service		Sunday Span of service	
A – 19-24 hours, Night service	70	47.6%	35	23.8%	14	9.5%
B – 17-18 hours, Late Evening Service	37	25.2%	55	37.4%	61	41.5%
C – 14-16 hours, Early Evening Service	24	16.3%	28	19.0%	26	17.7%
D – 12-13 hours, Day time Service	11	7.5%	10	6.8%	5	3.4%
E – 4-11 Hours, Peak hours only or limited Mid-day	5	3.4%	0	0.0%	0	0.0%
F – 0-3 Hours, Limited Service	0	0.0%	0	0.0%	0	0.0%
Total Routes in Service	147	100.0%	128	87.1%	106	72.1%
No Service	0	0%	19	12.9%	41	27.9%



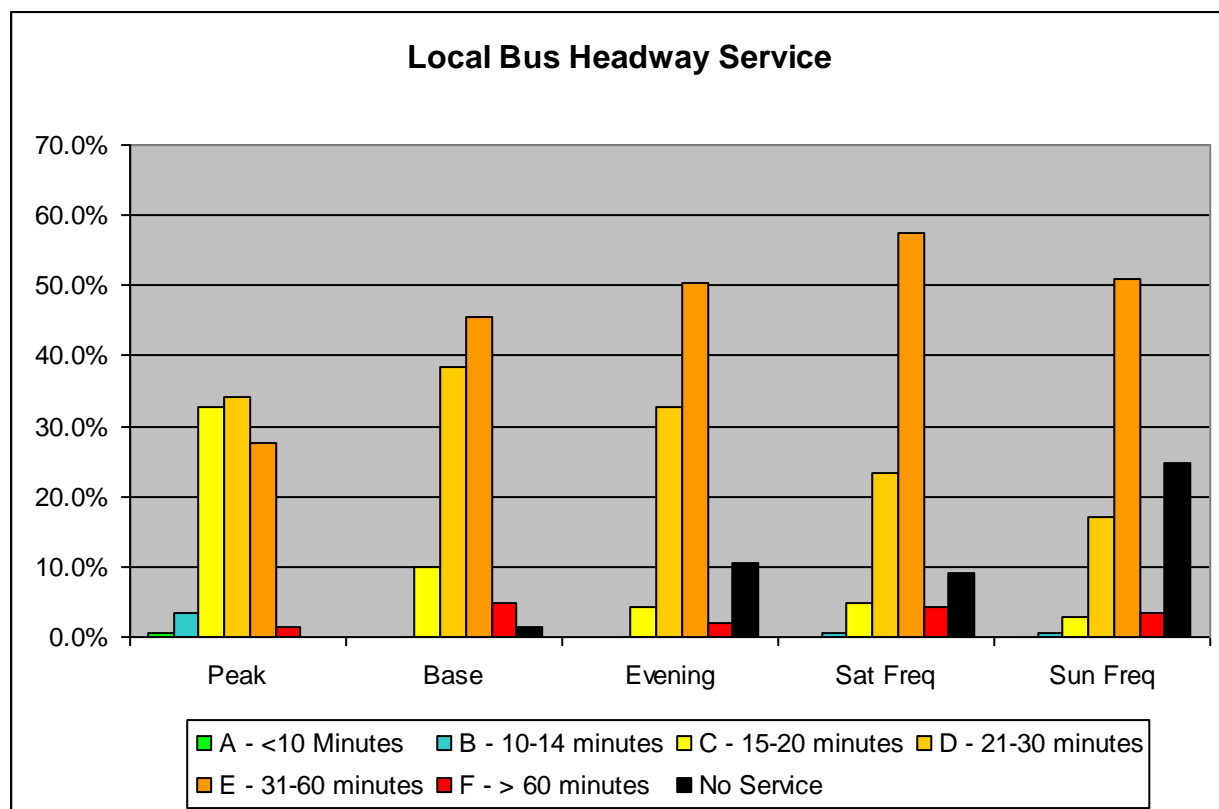
*Figure 1 – Local Bus Span of Service LOS*

Table 1 and Figure 1 show that most local bus routes in the region operate through at least the late evening of every weekday and Saturday, though almost a quarter of all local service is not available on Sunday. In terms of the time of day that bus service is provided, Span of Service, our region is performing quite well. Table 2 presents the number of routes operating at the various LOS levels for headways and Figure 2 presents Local Bus Headway LOS.

# Memorandum

*Table 2 – Local Bus Headway LOS*

	Weekday						Sat		Sun	
	Peak		Base		Evening		Sat Freq		Sun Freq	
A – <10 minutes	1	0.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
B – 10-14 minutes	5	3.4%	0	0.0%	0	0.0%	1	0.7%	1	0.7%
C – 15-20 minutes	47	32.0%	14	9.5%	6	4.1%	7	4.8%	4	2.7%
D – 21-30 minutes	53	36.1%	54	36.7%	46	31.3%	33	22.4%	24	16.3%
E – 31-60 minutes	39	26.5%	64	43.5%	71	48.3%	81	55.1%	72	49.0%
F – >60 minutes	2	1.4%	7	4.8%	3	2.0%	6	4.1%	5	3.4%
Total Routes in Service	147	100.0%	139	94.6%	126	85.7%	128	87.1%	106	72.1%
Routes not in Service	0	0.0%	8	5.4%	21	14.3%	19	12.9%	41	27.9%



*Figure 2 – Chart of Headway LOS for Local Bus Routes*

Table 2 and Figure 2 show that only 5% of routes (7 routes total) in the entire regional local bus network even in the peak hour have headways of less than 15 minutes. No local bus route has headway of less than 15 minutes during the weekday off peak (mid-day and evenings) periods. In fact, figure 2 reveals that outside of the peak period, over 50% of the local bus network operates at headways of greater than 30 minutes. In other words, there is only one bus per hour on these routes. In total, outside of the peak period, there is no time when more than fourteen (14) routes out of total of one-hundred and forty-one (147) local bus routes, operate at headways

## Memorandum

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of 20 minutes or less. For riders, this means that there are only fourteen routes in the entire region where there are more than two buses per hour. According to the Transit Capacity and Quality of Service Manual – 2<sup>nd</sup> Edition at headways of greater than 20 minutes, bus service is unattractive to choice riders. This means that the Atlanta region's local bus network as currently structured is not attractive for any riders with other options.

Recognizing the diverse nature of Atlanta region, local bus routes are proposed to be further broken down into five distinct categories defined below:

**Semi-Express:** Routes that use a freeway for an extended part of their route, but then transfer and circulate on local streets as a normal bus. Unlike the Express Bus routes, these routes generally run all day and on weekends or function as reverse commuter routes circulating in major employment centers. These routes extend from major transfer stations or central areas to more remote destinations not served by higher capacity transit services. Examples routes that would be included in this type of service are:

CCT 10A – Terrill Mill Reverse Commute  
CCT 10 – Cumberland Parkway  
GCT 101A – Mall of Georgia Reverse Commute  
MARTA 74 – Flat Shoals  
MARTA 185 – Alpharetta / Holcomb Bridge

**Arterial/Major Road:** Routes that travel along major arterials in the region for the majority of their routes. These function as line-haul route along major travel corridors. Examples routes that are proposed for inclusion in this category are:

GCT 10 – Buford Highway  
MARTA 39 – Buford Highway  
MARTA 5 – Roswell Road  
MARTA 48 – Thomasville  
MARTA 23 - Peachtree

**Suburban Local:** Local bus routes that serve land areas classified as suburban. Generally on major arterials since there are few connecting local streets due to the large number of cul-de-sacs. These routes serve as local services in areas with suburban-style development of non-gridded streets linking to the major transfer centers or points served by either high capacity fixed guideway services or major arterial routes. Examples routes that are proposed for inclusion in this category are:

CCT 20 – South Cobb Drive  
CTRAN 503 – Riverdale/Mt. Zion  
GCT 30 – Norcross / Technology Park

## Memorandum

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**Feeder:** Local bus routes serving more built-up areas with a finer grained street network than a suburban local route. These routes serve as local services in more urban areas with finer grained street networks linking to the major transfer centers or points served by either high capacity fixed guideway services or major arterial routes. Examples routes that are proposed for inclusion in this category are:

MARTA 45 – Virginia Highlands

MARTA 69 –

MARTA 97 – Atlanta Avenue

**Small Bus:** Routes that primarily serve as neighborhood circulation and usually found in more urban areas. These routes are usually operated with smaller vehicles than a full sized bus. These routes are the MARTA 300 series.

### Express Bus

As of June, 2007, there were 34 express bus routes operating within the Atlanta region, three (3) routes operated by Emory, seven (7) operated by CCT, six (6) routes operated by GCT, five (5) routes operated by MARTA (4 Blue-Flyer plus MARTA 143 – Windward P&R), and the final thirteen (13) operated by GRTA.<sup>3</sup> Express bus routes were defined primarily as those routes that operate from an out-lying Park&Ride lot to a major activity center or transfer station. All of MARTA's Blue-Flyer routes were considered Express Buses because of their limited stop service and differentiated branding. Table 3 shows the number of routes operating at the various Span of Service and Peak and Off-Peak Headway LOS as defined by the Transit Capacity and Quality of Service Manual – 2<sup>nd</sup> Edition. None of these routes provide service on weekday evenings, Saturdays or Sundays.

*Table 3 – Express Bus Span of Service and Headway LOS*

	Weekday Span of Service		Peak Hour Headway		Off-Peak Headway	
A – 19-24 hours, <10 minutes	0	0.0%	0	0.0%	0	0.0%
B – 17-18 hours, 10-14 minutes	0	0.0%	1	2.9%	0	0.0%
C – 14-16 hours, 15-20 minutes	7	20.6%	10	29.4%	1	2.9%
D – 12-13 hours, 21-30 minutes	15	44.1%	19	55.9%	1	2.9%
E – 4-11 Hours, 31-60 minutes	12	35.3%	4	11.8%	0	0.0%
F – 0-3 Hours, > 60 minutes	0	0.0%	0	0.0%	3	88.8%
Total Routes in Service	34	100.0%	34	100.0%	5	14.7%
No Service	0	0.0%	0	0.0%	29	85.3%

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<sup>3</sup> The 400 series routes operated under contract to CCT and GCT to GRTA are listed as operated by CCT and GCT.

## Memorandum

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As expected, most routes provide only peak hour or with a few providing peak hour and mid-day service.<sup>4</sup> Additionally, most express buses are operating at headways of 30 minutes or less which are acceptable headways for express bus services. One route is even operating at headways of 10-minutes during the peak hour indicating significant express service demand from that location. Overall, the majority of express bus services seem to fall in ranges expected – peak hour services with 20-30 minute headways with some routes even operating at significantly shorter headways.

### Activity Center

Activity Center routes are those routes which provide circulation service within activity centers such as the Buckhead Business Districts, major higher educational institutions and other areas or as shuttle routes between connections to the regional transit system and the activity center. Three routes operated as local routes by the primary operators were classified as circulators primarily because of their loop nature and service of major activity centers – MARTA routes 100 and 101 which are branded as the Downtown and Midtown Tourist Loops respectively, and C-TRAN Route 500 which provides service around the Airport Loop road during the weekdays. An additional twenty-seven (27) other routes operated by various other entities were examined for span of service and headway information including the routes operated by Emory, Georgia Tech, Georgia State, BATMA, City of Canton and the Atlantic Station Shuttle.

Tables 4 and 5 present circulator Span of Service and Headway LOS respectively.

*Table 4 – Circulator Span of Service LOS*

	Weekday Span of Service		Saturday Span of service		Sunday Span of service	
A – 19-24 hours, Night service	4	13.3%	1	3.3%	1	3.3%
B – 17-18 hours, Late Evening Service	5	16.7%	0	0.0%	0	0.0%
C – 14-16 hours, Early Evening Service	6	20.0%	1	3.3%	1	3.3%
D – 12-13 hours, Day time Service	3	10.0%	2	6.7%	0	0.0%
E – 4-11 Hours, Peak hours only or limited Mid-day	10	33.3%	6	20.0%	5	16.7%
F – 0-3 Hours, Limited Service	0	0.0%	1	3.3%	0	0.0%
Total Routes in Service	28	93.3%	11	36.7%	7	23.3%
No Service	2	6.7%	19	63.3%	26	76.7%

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<sup>4</sup> The Transit Capacity and Quality of Service Manual 2<sup>nd</sup> Edition defines Span of Service for express bus services as hours the bus operates, with service counted as being provided in the mid-day if riders can take a local bus route back to their origin even if the express route itself is not operating.

## Memorandum

*Table 5 – Circulator Headway LOS<sup>5</sup>*

	Weekday						Sat		Sun	
	Peak		Base		Evening		Sat Freq		Sun Freq	
A – <10 minutes	8	24.2%	7	21.2%	2	6.1%	0	0.0%	0	0.0%
B – 10-14 minutes	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
C – 15-20 minutes	6	24.2%	8	24.2%	10	30.3%	3	9.1%	2	6.1%
D – 21-30 minutes	5	18.2%	6	18.2%	1	3.0%	3	9.1%	3	9.1%
E – 31-60 minutes	4	18.2%	2	6.1%	2	6.1%	2	6.1%	1	3.0%
F – >60 minutes	1	3.0%	1	3.0%	0	0.0%	0	0.0%	0	0.0%
Total Routes in Service	24	87.9%	24	72.7%	15	45.5%	8	24.2%	6	18.2%
Routes not in Service	6	12.1%	9	27.3%	18	54.5%	25	75.8%	27	81.8%

Like the fixed routed system, the circulator network is most robust during weekdays, though the circulators do not appear to operate for as long as the local bus routes. An interesting feature of the headways is how frequently many of the circulators operate during the majority of the weekday with at least seven routes operating at less than 10 minute headways until the evening. Examining these routes shows them to be all routes operated by Emory, Georgia Tech, or Georgia State. Overall, circulators in the Atlanta region operate most frequently during weekdays with most of those operating having at least two or more trips per hour.

### Rail

As of March, 2007 there are four rail lines operating on the heavy rail system in Atlanta:

- North Line – Airport to North Springs
- Northeast Line – Airport to Doraville
- East-West Line – H.E. Holmes to Indian Creek
- Proctor Creek Line – Bankhead to Candler Park/Edgewood

There are also two shared segments. The trunk between Airport and Lindbergh Center is shared by the North and Northeast lines and the trunk between Ashby and Candler Park/Edgewood is shared by the East-West and Proctor Creek lines. All of these routes provide a Span of Service LOS A operating over 20 hours every day and, with the exception of the Proctor Creek Line, over 21 hours every weekday. During the peak hours, these routes operate at 10 minute headways provide LOS B on their branches and LOS A on their shared segments. Mid-day the routes operate at 15-minute headways (LOS C) with 7.5 minutes (LOS A) on their shared trunks. In the evenings LOS C is provided along the entire system since the North and Proctor Creek lines are limited to serving only their specific branches with transfers required to travel further on the system. Weekends, the line East-West and Proctor Creek lines provide 15-minute (LOS C) service with a 7.5 minute (LOS A) headways on the shared segment while the North and

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<sup>5</sup> Note – Headway information was not available for certain shuttles. Therefore, the percentages do not add up to 100%. Information will be updated as it becomes available.

## **Memorandum**

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Northeast lines provide 20-minute (LOS C) headways with a 10 minute (LOS B) headway on the shared segment.

### **Changes since April, 2007**

Seven new routes have started since March, 2007 bringing the total number of routes tracked to 211. They are:

- MARTA 117 – Rockbridge Road / Panola Road
- MARTA 185 – Alpharetta / Holcomb Bridge Road
- MARTA 393 – Sylvan Road
- Xpress 418 – Snellville to Downtown
- Xpress 422 – Panola Road to Downtown
- Xpress 428 – Panola Road to Perimeter Center
- Xpress 475 – Mableton to Downtown

One route, MARTA 316 – Mall at Stonecrest, was discontinued. The increase in Xpress service shows the continued strengthening of the peak-hour transit system towards the major employment centers. Additionally, four of the new seven routes (MARTA 117, Xpress 418, 422, and 423) are located and serving the east-central part of the region, partially in reflection of the opening of the new Panola Road Park & Ride lot and associated service in DeKalb County. However, the off-peak system continues to show a lack of service with over half of the local bus system operating at less than once-per hour and over a quarter of the local bus service not operating on Sundays.

Overall, no major changes were found for the rail system or activity center routes.

### **Summary**

Overall, the Atlanta region continues to have a regional transit network that operates for much of the day on routes that are running. Local bus routes generally run for much of the day, though over a quarter do not operate on Sundays and frequency is usually only once an hour. The express bus routes provide weekday peak hour services primarily on frequencies of half an hour or less. The activity center routes also tend to operate primarily on weekdays, though with a longer span of service than express buses, though shorter than local bus routes. Additionally, activity center routes also tend to operate with at least two or more trips per hour when they are running. The rail system provides service throughout the day and well into the late night with LOS A service levels on the trunk lines present throughout much of the morning, afternoon and early evening.